

From: [Hedgpeth, Zach](#)
To: [D.wu@state.or.us](#); ["ORMAN Michael"](#); ["WESTERSUND Joe"](#); ["JACOBS.Patty@deq.state.or.us"](#); ["WEST Walt"](#)
Cc: [Hunt, Jeff](#)
Subject: RE: Request for Additional Information - GTN Compressor Stations 12 & 13
Date: Friday, October 16, 2020 10:24:00 AM

Hello D, et al,

As we discussed last Friday, I've briefly reviewed the SCR cost analyses for GTN Stations 12 and 13 with the goal of understanding what was changed in the calculations that resulted in the increased \$/ton presented. Here's a summary of my findings:

Station 12

Calculations reviewed:

[1] *"SCR Cost Effectiveness_Stn 12.xlsx"*

[2] *"Final 091820 SCR Cost Effectiveness_Stn 12-30 yrs basis.xlsx"*

Unit 12A – The \$/ton value increased from \$4,335/ton to \$5,885/ton. The most significant change is that the SCR control efficiency was reduced from 95% to 75%. This accounts for the vast majority of the change in \$/ton. Other increases in costs are \$235,000 added for "Quote for piping rerouting, etc. to accommodate retrofit", and the costs for operating and maintenance labor were increased. Both sets of calculations are based on 30 years at 3.25%.

Unit 12B – The \$/ton value increased from \$7,390/ton to \$11,237/ton. Again the SCR control efficiency was reduced from 95% to 75%, which accounts for about half the increase in \$/ton. The other significant change is that \$1M was added for "Quote for major reconstruction to accommodate retrofit". These two changes account for the majority of the increase in \$/ton value. Otherwise, the costs for operating and maintenance labor were increased as with Unit 12A. Both sets of calculations are based on 30 years at 3.25%.

Unit 12C – The initial calculations [1] do not include Unit 12C. The \$/ton value in [2] is significantly higher than any of the other values at \$53,559/ton. Most of the reason the \$/ton is so much higher for Unit 12C is that the pre-control emission rate on this newer unit is much lower than the older units. Also, the calculations assume SCR achieves only 60% control efficiency. These factors result in far fewer tons of NOx removed, and therefore a much higher \$/ton value. The overall costs presented for this unit are not significantly higher than for Unit 12A, which is around the same size.

Station 13

Calculations reviewed:

[3] *"SCR Cost Effectiveness_Stn 13.xlsx"*

[4] *"Final 091820 SCR Cost Effectiveness_Stn 13-30 yrs basis.xlsx"*

Unit 13C – The \$/ton value decreased marginally from \$12,071/ton to \$11,848/ton. The significant changes here effectively canceled out. First, the equipment life and interest rate were changed from 20 years/5% to 30 years/3.25%. Second, \$1M was added for "Quote for major reconstruction to accommodate retrofit", as with Unit 12B. Both [3] and [4] assume 75% SCR control efficiency. There are a few other small changes including that sales tax was removed and the costs for operating and maintenance labor were

increased as with 12A and 12B.

Unit 13D – The \$/ton value decreased marginally from \$11,449/ton to \$11,237/ton. The changes here are analogous to those described above for Unit 13C.

A few comments on Station 12 and 13 cost analyses...

1. The detailed calculations for the capital cost estimates are not shown, but they appear to be generic cost estimates. ODEQ should be aware that these cost estimates are generally of low quality (less accurate than the study level, +/-30% accuracy which is the basis for the EPA Control Cost Manual). Site-specific SCR vendor quotes or cost estimates should be requested.
2. The SCR cost analyses should assume a reasonable, upper end control efficiency of at least 90%. Use of a lower control efficiency would need to be supported by unit-specific documentation from SCR vendors, explaining the technical reasons that a higher control efficiency is not achievable.
3. The added costs for piping and building retrofits need to be supported with the quotes cited. ODEQ should review the quotes closely to ensure the costs are necessary solely due to the SCR installation.

Note that I did not conduct a complete review of these calculations/4-Factor Analyses due to time constraints. Of course I am happy to talk over my comments, at your convenience.

Have a great weekend!

Zach Hedgpeth, PE

206-553-1217

Pronouns: he/him/his

From: WU D <D.WU@state.or.us>

Sent: Friday, October 9, 2020 10:14 AM

To: Hedgpeth, Zach <Hedgpeth.Zach@epa.gov>; ORMAN Michael <Michael.ORMAN@state.or.us>

Cc: WESTERSUND Joe <Joe.WESTERSUND@state.or.us>; JACOBS Patty <Patty.JACOBS@state.or.us>

Subject: FW: Request for Additional Information - GTN Compressor Stations 12 & 13

From: WU D

Sent: Friday, September 18, 2020 11:17 AM

To: ORMAN Michael <Michael.ORMAN@deq.state.or.us>; WESTERSUND Joe <Joe.WESTERSUND@deq.state.or.us>; WEST Walt <Walt.WEST@deq.state.or.us>

Cc: WILLIAMS Karen <Karen.WILLIAMS@deq.state.or.us>; BAILEY Mark <Mark.Bailey@deq.state.or.us>

Subject: FW: Request for Additional Information - GTN Compressor Stations 12 & 13

FYI –

From: Melinda Holdsworth <melinda_holdsworth@tcenergy.com>

Sent: Friday, September 18, 2020 10:41 AM

To: WU D <D.WU@state.or.us>

Subject: Request for Additional Information - GTN Compressor Stations 12 & 13

D,

Attached are the updated/detailed spreadsheets and analysis for GTN Stations 12 and 13.

Please let us know if you have any questions.

Happy Friday!
Thanks,
Mel

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Thank you